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| 10/699,593 | 10/30/2003 | Hiroynki Seki | FUJO 20.695 (100794-00490) | 1897 |
| 26304 7590 02/02/2010 KATTEN MUCHIN ROSENMAN LLP 575 MADISON AVENUE NEW YORK, NY 10022-2585 | | | | |
| EXAMINER | | | | |
| CHEN, JUNPENG | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 2618 | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/699,593

Applicant(s)

SEKI ET AL.

Examiner

JUNPENG CHEN

Art Unit

2618

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 4-8 and 11-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4-8 and 11-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

1. This action is in response to applicant's amendment/arguments filed on 11/12/2009. Claims 1, 7, 8 and 14 have been amended. Claim 15 has been added. Currently, claims 1, 4-8 and 11-15 are pending. **This action is made FINAL.**

Response to Arguments

2. Applicant's arguments with respect to amended independent claims 1 and 8 have been considered but they are not persuasive.

Regarding independent claims 1 and 8, Applicant argues that the previously cited portions of Choi and AAPA (PAAA) does not disclose the newly added limitation "...selecting, from the selected antennas excepting a specified antenna, **antennas** of which control weights are calculated". The Examiner would like to point out that, a different portion of AAPA, specifically, Figure 2 with corresponding description, discloses a four-antenna configuration, which the weights of three selected **antennas** are calculated. Therefore, the combination of Choi and AAPA discloses the claimed invention. See rejection below for more details.

Response to Amendments

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Consider claim 15, it recites phrase "an unselected antenna". However, applicant fails to clearly define the relationship between the recited "an unselected antenna" in claim 15 with the recited phrase "a specific antenna" as recited in claim 1, line 12. According to current specification, they are referring to the "same antenna", and therefore, the Examiner reads the "an unselected antenna" recited in claim 15 as the "a specific antenna" recited in claim 1. Appropriate action is still required.

Claim Rejections – 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 5, 7, 8, 12, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Choi** et al. (U.S. Patent 6,754,473 B1) in view of prior art admission by Applicant (hereinafter as **PAAA**).

Consider **claim 1**, Choi discloses a transmitting diversity system with a base station transmitting signals from a plurality of antennas and performing diversity transmission according to feedback data transmitted from a mobile node receiving the signals (read as the closed loop transmit antenna diversity scheme, line 42 of col. 1 to line 11 of col. 2), comprising:

a signal condition detection unit detecting antennas to be used for the diversity transmission from the plurality of antennas based on a signal condition detected by the signal condition detection unit (read as the terminal estimator that estimates the channel environment between the base station and the terminal, lines 55-62 of column 3);

an antenna selection unit selecting antennas to be used for the diversity transmission from the plurality of antennas based on a signal condition detected by the signal condition detection unit (read as all antennas with an estimation of the channel environment are selected for the diversity transmission, Figures 1-3, lines 50-55 of column 5); and

a control weight unit calculating the control weight applied to the antenna, and applying the control weight to the signal transmitted (read as at $t+T+1$, assigning a new weight for antenna #2 based on calculation, Figures 1-3, lines 5—55 of column 5).

However, Choi does not specifically disclose the selecting, and applying control weights to signals transmitted, from the selected antennas, excepting a specified antenna, antennas of which control weights are calculated.

Nonetheless, PAAA discloses a system configuration using four transmitting antennas, the weighting vector $w=[w_1, w_2, w_3, w_4]^T$ is multiplexed onto an upward channel signal as feedback data and is transmitted to the base station. However, there is no need to transmit all values w_1 - w_4 , and it is acceptable if only values w_2 - w_4 obtained by calculation with assumption of $w_1=1$ being transmitted, Figure 2, page 5 with line 6 to page 6 with line 10 of current specification.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of PAAA into the teachings of Choi as to reduce possible control delay on a different system configuration.

Consider **claim 5, as applied to claim 1 above**, Choi, as modified by PAAA, discloses wherein said signal condition detection unit is provided for the mobile node (read as the terminal estimates the channel environment, lines 55-62 of column 3).

Consider **claim 7, as applied to claim 1 above**, Choi, as modified by PAAA, discloses the processing circuitry within the base station setting weight to maximize the downlink received power for given transmit power, but does not specifically disclose wherein the plurality of antennas are provided for a plurality of base stations, and said antenna selection unit also selects a base station to communicate with by selecting the antennas selected as the antennas of which the control weights are calculated and making possible a handover process accompanying the travel of each mobile node.

However, the Examiner takes Office Notice that it is well-known that during the process of handover, the involving base stations are communicating with each other through antennas, that the processing circuitry within the base station can set weight to maximize the received power for a given transmit power.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to modify the teachings of Choi to set the weight of the selected antenna that communicate with other base station in order to enhance the operation characteristics of the transmission system.

Consider **claim 8**, Choi discloses a transmitting diversity method with a base station transmitting signals from a plurality of antennas and performing diversity transmission according to feedback data transmitted from a mobile node receiving the

signals (read as the closed loop transmit antenna diversity scheme, line 42 of col. 1 to line 11 of col. 2), comprising the steps of:

detecting the condition of a signal transmitted from each of the plurality of antennas (read as the terminal estimator that estimates the channel environment between the base station and the terminal, lines 55-62 of column 3);

selecting antennas to be used for the diversity transmission from the plurality of antennas based on a signal condition detected by the signal condition detection unit (read as all antennas with an estimation of the channel environment are selected for the diversity transmission, Figures 1-3, lines 50-55 of column 5); and

calculating the control weight applied to the antenna, and applying the control weight to the signal transmitted (read as at $t+T+1$, assigning a new weight for antenna #2 based on calculation, Figures 1-3, lines 5—55 of column 5).

However, Choi does not specifically disclose the selecting, and applying control weights to signals transmitted, from the selected antennas, excepting a specified antenna, antennas of which control weights are calculated.

Nonetheless, PAAA discloses a system configuration using four transmitting antennas, the weighting vector $w=[w_1, w_2, w_3, w_4]^T$ is multiplexed onto an upward channel signal as feedback data and is transmitted to the base station. However, there is no need to transmit all values w_1-w_4 , and it is acceptable if only values w_2-w_4 obtained by calculation with assumption of $w_1=1$ being transmitted, Figure 2, page 5 with line 6 to page 6 with line 10 of current specification.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of PAAA into the teachings of Choi as to reduce possible control delay on a different system configuration.

Consider **claim 12, as applied to claim 8 above**, Choi, as modified by PAAA, discloses wherein the detecting step is performed in the mobile node (read as the terminal estimates the channel environment, lines 55-62 of column 3).

Consider **claim 14, as applied to claim 8 above**, Choi, as modified by PAAA, discloses the processing circuitry within the base station setting weight to maximize the downlink received power for given transmit power, but does not specifically disclose wherein the plurality of antennas are provided for a plurality of base stations, and said antenna selection unit also selects a base station to communicate with by selecting the antennas selected as the antennas of which the control weights are calculated and making possible a handover process accompanying the travel of each mobile node.

However, the Examiner takes Office Notice that it is well-known that during the process of handover, the involving base stations are communicating with each other through antennas, that the processing circuitry within the base station can set weight to maximize the received power for a given transmit power.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to modify the teachings of Choi to set the weight of the

selected antenna that communicate with other base station in order to enhance the operation characteristics of the transmission system.

Consider **claim 15, as applied to claim 1 above**, Choi, as modified by PAAA, discloses the control weight unit fixes a control weight of an unselected antenna to a current value (read as at $t=T+1$, the base station maintains a current weight for antenna #1, Figures 1-3, lines 50-55 of column 5).

Claims 4, 6, 11 and 13 are is rejected under 35 U.S.C. 103(a) as being unpatentable over **Choi et al.** (U.S. Patent 6,754,473 B1) in view of prior art admission by Applicant (hereinafter as **PAAA**), and in further view of **Greenstein et al.** (U.S. Patent 6,131,016).

Consider **claim 4, as applied to claim 1 above**, Choi, as modified by PAAA, discloses the claimed invention above but does not specifically discloses wherein said signal condition detection unit measures propagation loss, fading frequency or correlation coefficient between antennas of an incoming signal.

Nonetheless, Greenstein discloses a similar communication method, which comprising an inherently existing detector that detects the path loss characteristics (channel environment information) as fading, Figure 4, lines 45-66 of column 5, lines 8-9 and lines 28-30 of column 6.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Greenstein into Choi, as path loss characteristics is just one of the well known ways that determine the environment condition between the base station and the terminal.

Consider **claim 6, as applied to claim 1 above**, Choi, as modified by PAAA, discloses the claimed invention above but does not specifically disclose wherein said signal condition detecting unit is provided for the base station.

Nonetheless, Greenstein further discloses an inherently existing detector that detects the path loss characteristics as fading and the detection (analysis) can be performed in the transmission processing circuitry (base station), Figure 4, lines 45-64 and 66 of column 5.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Greenstein into Choi, as it is just a matter of design choice.

Consider **claim 11, as applied to claim 8 above**, Choi, as modified by PAAA, discloses the claimed invention above but does not specifically disclose wherein said signal condition detection unit measures propagation loss, fading frequency or correlation coefficient between antennas of an incoming signal.

Nonetheless, Greenstein discloses a similar communication method, which comprising an inherently existing detector that detects the path loss characteristics (channel environment information) as fading, Figure 4, lines 45-66 of column 5, lines 8-9 and lines 28-30 of column 6.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Greenstein into Choi, as path loss characteristics is just one of the well known ways that determine the environment condition between the base station and the terminal.

Consider **claim 13, as applied to claim 8 above**, Choi, as modified by PAAA, discloses the claimed invention above but does not specifically disclose wherein said signal condition detecting unit is provided for the base station.

Nonetheless, Greenstein further discloses an inherently existing detector that detects the path loss characteristics as fading and the detection (analysis) can be performed in the transmission processing circuitry (base station), Figure 4, lines 45-64 and 66 of column 5.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Greenstein into Choi, as it is just a matter of design choice.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any response to this Office Action should be **faxed to (571) 273-8300 or mailed to:**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Junpeng Chen whose telephone number is (571) 270-1112. The examiner can normally be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

Art Unit: 2618

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Junpeng Chen
J.C./jc

/Edward Urban/

Supervisory Patent Examiner, Art Unit 2618